

REMARKS

This application has been carefully reviewed in light of the Office Action mailed March 6, 2009. By way of this amendment, independent claims 10 and 19 have been amended to distinguish over the cited art, and claims 11 and 20 have been consequentially amended to correspond to the amendments of claims 10 and 19, respectively. Claims 1 and 2 were previously canceled. Accordingly, claims 3-20 remain pending in the application.

Claim Rejections – 35 U.S.C. §103

Pursuant to the Office Action at pages 3-4, claims 3, 4, 10-13, 19 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bolt (U.S. 5,785,508) as evidenced by Jang, Riffe and Kandpal cited in the previous office action. Specifically, the Office Action states that Bolt discloses a pump assembly having first and second valves, first and second pump heads each defining a recess cooperating to form a valve pocket, and a flexible valve member. The Office Action further states that Bolt discloses a valve compartment dimensioned so as to limit the travel of the valve a distance very similar to the thickness of the valve, and further discloses a projection extending from the upper surface of the compartment to limit travel.

Applicant respectfully disagrees that Bolt, Jan, Riffe and Kandpal collectively disclose the pump and valve arrangement as presently claimed. Specifically, independent claims 10 and 19, referred to collectively herein as they include substantially the same limitations, have been amended to require that the valve element be non-hinged, positioned within the first valve compartment to pneumatically float in response to a reciprocating pumping action imposed upon the first valve element, and cooperatively retained at opposed ends by the pump chamber and the pump head to allow a central portion of the first valve element to symmetrically deflect into the first valve pocket when in the open position. *Support for the additional limitations can be found in at least paragraph [0030] and FIGs. 3 and 7 of the specification which disclose the structure and retention of the valve element, FIG 1 which illustrates annular valve seat, paragraph [0031] which discloses the manner of deflection of the center portion of the valve element in the open position, and FIG. 7 which illustrates deflection of the center element controlled by the dimension of the pocket.*

Thus, claims 10 and 19 as amended now include a valve element having a non-

hinged, specific structure that deflects into the valve pocket a predetermined distance controlled by the depth of the pocket. In contrast and referring to FIG. 3 of the Bolt reference, Bolt discloses a hinged valve flap (14) connected to the remainder of the valve disk (15) through a web (17), and thus discloses angular flap movement with one free end of the valve flap (14) being able to travel a distance significantly greater than its thickness. Precisely controlling the amount of symmetrical deflection of a valve element retained at both ends extends the life of the valve element while still allowing the appropriate flow through the valve as the deflection instantaneously opens or closes the intake/outlet in a symmetrical manner. In contrast, the hinged valve arrangement of Bolt inherently involves a gradual opening/closing of the intake/outlet inherent in angular movement and thus requires greater valve travel at the un-hinged end for appropriate flow. Accordingly, as restriction of flow would occur with a hinged valve flap (14) moving through the limited degree of travel required in the present invention, it would not be envisioned to optimize the depth of the recess (13) to the same degree.

Further, the structure, retention and manner of deflection of Applicant's valve element as now claimed is not obvious in view of a hinged valve flap retained at one end provided by Bolt. Still further, none of Jang, Raffe and Kandpal disclose or illustrate the valve element as claimed or limiting movement to the degree required by claims 10 and 19, as the noise level and cycle time requirements of a diaphragm pump of the present invention would not be a consideration of the compressor types of Jang, Raffe and Kandpal.

Accordingly, in view of the amendments to independent claims 10 and 19, and the remarks provided above, Applicant submits that the rejection of claims 3, 4, 10-13, 19 and 20 have been overcome and are now in condition for allowance. With regard to the rejection of dependent claims 5-9 and 14-18 under 35 U.S.C. §103(a), these claims include all of the limitations of at least claims 10 and 19, respectively, and thus are submitted to be allowable based on the remarks provided above and their dependent construction.

This response is being submitted with a petition for a one-month extension of time. If there are any other fees due in connection with this response the Director is hereby authorized to charge any additional fees or any underpayments which may be required for the above-referenced application to Deposit Account No. 01-0265. Any refunds should be applied to Deposit Account No. 01-0265.

Respectfully submitted,

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